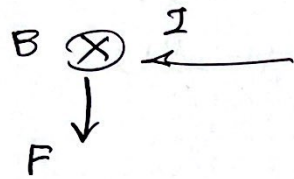


1 پاسخ تشریحی فیزیک - نوبت ریاضی ۱۴۰۱ - عارف رسولی از دبیر

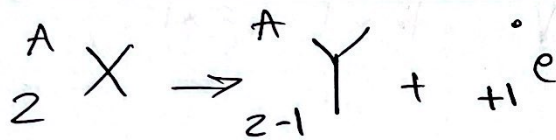
$$214 \frac{\text{km}}{\text{h}} \rightarrow \frac{\text{mile}}{\text{min}} \rightarrow \frac{214 \times 1.609}{1.609 \times 60} = 2 \frac{\text{mile}}{\text{min}} \quad \frac{15}{151}$$

$$\Delta \theta = \omega \Delta t = 3 \times 10^{-3} \times 2 \times 10^3 = 6 \text{ rad} = 1.8 \text{ m} \quad \frac{15}{152}$$

$$F = BIL \sin \theta = 0.5 \times 10^{-4} \times 2 \times 2 \times 10^3 = 2 \times 10^{-4} \text{ N} \quad \frac{15}{153}$$



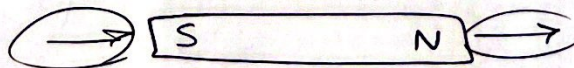
قاعده دست راست ← پاسخ



پوزیترون $\frac{15}{154}$

$$V = \sqrt{\frac{F}{\rho A}} \rightarrow \rho = \sqrt{\frac{F}{V^2 A}} \rightarrow \rho = 10 \text{ N} \quad \frac{15}{155}$$

$$\frac{V_r}{V_i} = \frac{N_r}{N_i} \rightarrow \frac{V_r}{25} = \frac{900}{50} \rightarrow V_r = 450 \quad \frac{15}{156}$$



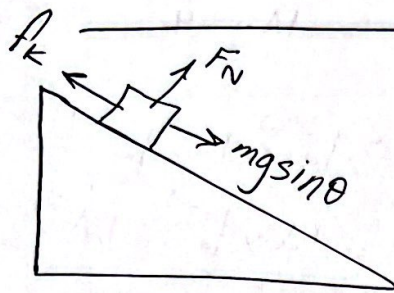
$$f_1, 14, f_r, 22 \rightarrow f_r - f_1 = 22 - 14 = 8 \text{ Hz} \quad \frac{15}{157}$$

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$$I = I_{\max} \sin(\omega t)$$

$$I_{\max} = I \quad \omega = \frac{2\pi}{T} = \frac{2\pi}{\frac{1}{100}} = 200\pi$$

$$\rightarrow I = I \sin(200\pi t)$$



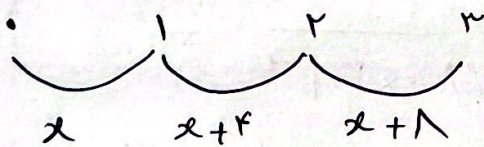
$$\Rightarrow W_R = W_{F_N} + W_{f_k} \neq 0$$

$$\Rightarrow \Delta K + \Delta U \neq 0$$

$$\Rightarrow W_{\text{net}} = \Delta K = 0$$

$$\Rightarrow \Delta K + \Delta U \neq 0$$

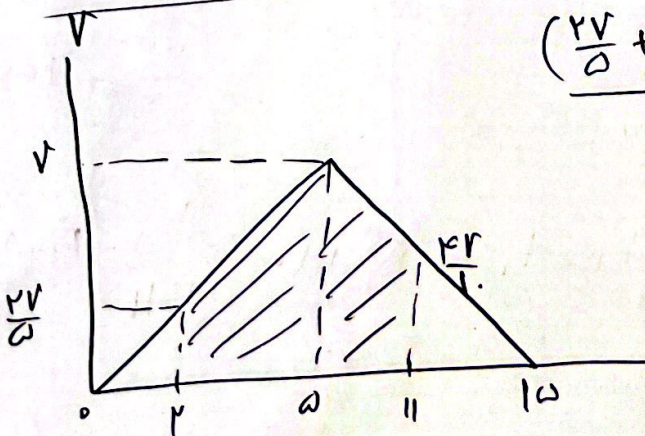
$$W = -P\Delta V = -10^5 \times (-0.02 \times 10^{-3}) = +2 \text{ J}$$



$$2\lambda + \lambda = \lambda + \lambda + \lambda$$

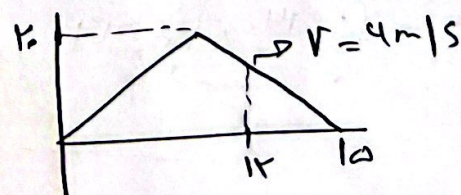
$$\lambda = 1 \text{ m}$$

$$\Delta x = \frac{1}{2} a t^2 + v_0 t \rightarrow \lambda = \frac{1}{f} \times \epsilon + v_0 \rightarrow v_0 = 4 \frac{\text{m}}{\text{s}}$$



$$\left(\frac{v}{2} + v \right) \frac{t}{2} + \frac{(0.5v + v) t}{2} = 124$$

$$V = 20$$



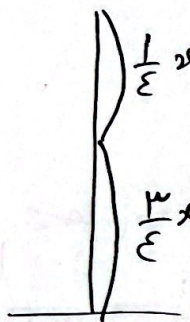
$$v = at$$

۱۴۴ - در لحظه t_s سرعت مفروض
۱۵

$$\frac{v_{1s}}{v_{2s}} = \frac{r}{r} = 1$$

$$\Delta x = v_i t \rightarrow 1 = 1 \cdot v_i \rightarrow v_i = 10 \text{ m/s} \quad \text{۱۴۵}$$

$$v_i = 10 \rightarrow t = t_s \rightarrow \frac{t}{r} = r_s$$



$$\bar{S} = \frac{at + 10t}{rt} = 10 \frac{\text{m}}{\text{s}}$$

$$\bar{F}_{\text{net}} = F = \frac{m \Delta v}{\Delta t} \rightarrow F = \frac{(10 - 0)}{\Delta t}$$

$$\Delta t = 20 \text{ s}$$

$$\bar{F}_{\text{net}} = \frac{\Delta p}{\Delta t} = \frac{S_{\text{فشار}}}{\Delta t} \rightarrow \frac{(10 + 10) \cdot r}{\Delta t} = \frac{v_i}{\Delta t} = 10 \frac{\text{m}}{\text{s}} \quad \text{۱۴۸}$$

$$f_{\text{sm}} = f_s \cdot F_N = \frac{r}{r} \times 4 = 40 \rightarrow 20 < 40 \quad \text{۱۴۹}$$

(۲۰) < (۴۰)
حرکت می کند

$$f_s = 20 \text{ N}$$

$$F_N = 4 \rightarrow R = \sqrt{20^2 + 4^2} = 40$$

$$y_{os} \quad r_s \rightarrow$$

$$\rightarrow ? = r_s$$

$$? \quad 1 \rightarrow$$

$$\omega = \frac{v r}{r} = \frac{v r}{r} = r \rightarrow v = r \omega$$

$$= r \times r = r^2$$

$$K = \frac{1}{r} m v^2 = \frac{1}{r} \times \omega \times r^2 = 10 \pi^2 J$$

$$B = 1 \cdot \log \frac{I}{I_0} \rightarrow 4 = 1 \cdot \log \frac{I}{10^{-12}} \rightarrow 10^4 = \frac{I}{10^{-12}}$$

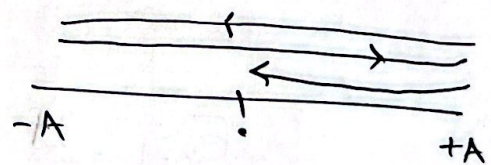
$$I = 10^{-4} = \frac{P}{A} \rightarrow P = 10^{-4} \times r \pi r^2 = 10^{-4} \times 1 \times 10 \times 10 \times 10^2$$

$$= 10 \text{ mW}$$

$$T = r r \sqrt{\frac{L}{g}} \rightarrow 1 = r r \sqrt{\frac{L}{r^2}} \rightarrow L = \frac{1}{2} \text{ m} = 10 \text{ cm}$$

$$T = r r \sqrt{\frac{m}{k}} = r \sqrt{1} \cdot \sqrt{\frac{0.12}{\omega}} = r \sqrt{1 \times 1} = 0.12 \text{ s}$$

$$\frac{\Delta t = 0.12}{T = 0.12} = \frac{\omega}{2} \rightarrow T = \frac{1}{2}$$

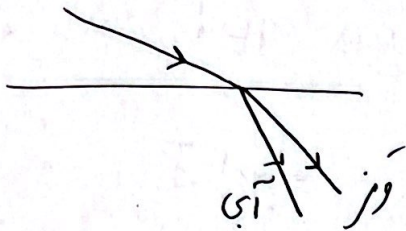


$$\frac{L = \omega A}{\Delta x = |A|} = \omega$$

$V = \frac{\sqrt{r}}{r} V_m \rightarrow k = u \rightarrow E = \frac{1}{2} m A^2 \omega^2 = \frac{1}{2} k A^2 - 14^2$
 $= \frac{1}{2} \times 0.0 \times 14 \times 10^{-4} = 0.1 \text{ J}$

$k = \frac{E}{r} = 0.12 \rightarrow E - k = 0.12 \text{ J}$

۱۷۵- هر چه با هم بین تر باشد نسبت بین تر است.



$E_B = \frac{r}{s} E_A \rightarrow f_B = \frac{r}{s} f_A$

$\lambda_B = \frac{s}{r} \lambda_A \quad \lambda_B - \lambda_A = \frac{1}{2} \lambda_A = 0$

$f_A = \frac{c}{\lambda_A} = \frac{3 \times 10^8}{100 \times 10^{-9}} = \frac{1}{0} \times 10^{14} = 2 \times 10^{15} \text{ Hz}$

$\lambda_A = 100 \text{ nm}$

$f_A - f_B = \frac{1}{2} f_A = \frac{1}{2} \times 2 \times 10^{15} = 0.0 \times 10^{15} = 0 \times 10^{15} \text{ Hz}$

$\frac{1}{2} m v_{\max}^2 = \frac{hc}{\lambda} - W \rightarrow$

$\frac{\frac{1}{2} \times 9 \times 10^{-31} \times 200 \times 10^3}{1.4 \times 10^{-19}} = \frac{1240}{\lambda} - 4.54 \rightarrow \lambda \sim 240 \text{ nm}$

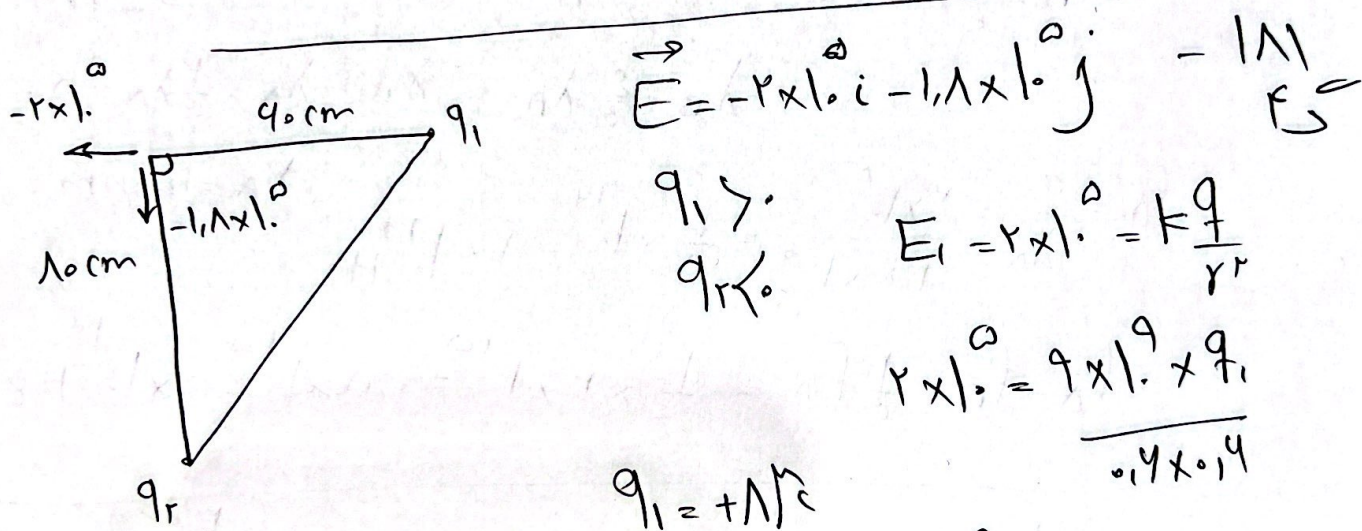
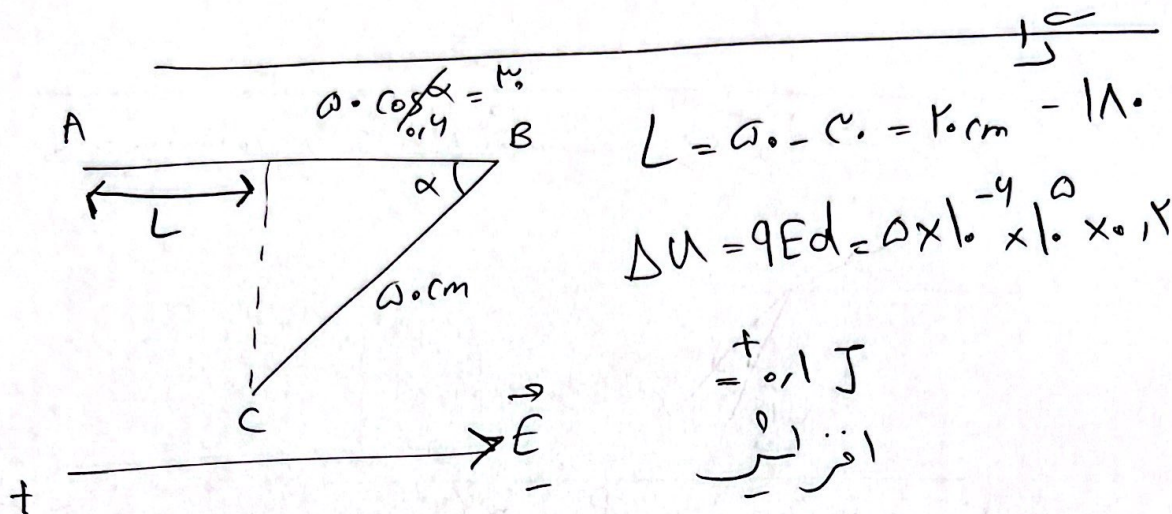
$\frac{N_0}{14} \rightarrow \text{عدد } 14 = 2.4 \rightarrow \text{عدد } 14 = 2.4$

9

$$F' = k \frac{q_1 q_r}{r^2} \rightarrow \frac{1}{\left(\frac{4}{5}\right)^2} = F$$

$$\frac{F'}{F} = \frac{25}{16} \sim \frac{1.56}{1}$$

افزایش ۵۶٪



$$E_r = 1.8 \times 10^{-9} = \frac{9 \times 10^9 \times q_r}{0.18 \times 0.18} \rightarrow q_r = -15.1 \mu\text{C}$$

$$U = \frac{1}{\epsilon} C V^2 \rightarrow 2 \times 10^{-12} = \frac{1}{\epsilon} \times C \times 400$$

$$C = 10^{-10} = 1.77 \text{ f} \rightarrow \frac{C'}{C} = \frac{k}{1} = 2$$

$$k = 2$$

V

$$V = \mathcal{E} + I r \rightarrow 10 + 1 I = 12$$

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$$I = 2A$$

$$I = \frac{\mathcal{E}}{R_T + r}$$

$$\rightarrow r = \frac{10 - 12}{-2} = 1 \Omega$$

$$R = 1 \Omega$$

$$V = IR = 2V$$

$$\therefore P = \frac{10^2}{2R}$$

$$\therefore P = \frac{10^2}{\frac{2R}{2}}$$

$$\sum - 10 \mathcal{E}$$

$$\left| \frac{1}{2} \frac{10^2}{R} - \frac{2}{2} \frac{10^2}{R} \right| = 9 \rightarrow \frac{1}{4} \times \frac{10^2}{R} = 9$$

$$\therefore \frac{10 \times 10}{4R} = 9 \rightarrow R = 2.7 \Omega$$

$$I = \frac{10 - 12}{12} = -0.167 A \rightarrow V_A + 2(-0.167) + 12 + 1.0(-0.167) = 0$$

$$V_A = -13.167 V$$

$$P = \mathcal{E} I + r I^2 = (12 \times 2) + (1 \times 2^2) = 28 W$$

$$\sum - 10 \mathcal{E}$$

$$P = \rho g h \rightarrow 4000 = 1000 \times P \times 1 \rightarrow P = \frac{4000}{1000} = 4 \text{ cm Hg}$$

$$\rho h = \rho_{\text{Hg}} h \rightarrow h = \frac{4000 \times 1000}{13600} \times 100 = 294.1 \text{ cm Hg}$$

$$k = \frac{P}{r_m}$$

$$k_A = k_B$$

$$m_A = \frac{1}{2} m_B \rightarrow r = \frac{1}{2} m_B$$

$$m_B = 1 \text{ kg}$$

$$PV = nRT$$

$$\rightarrow \frac{P_1 V_1}{n_1 T_1} = \frac{P_2 V_2}{n_2 T_2} \quad \text{--- 1A}$$

$$n = \frac{m}{M} \rightarrow 1 = \frac{m}{rM}$$

$$m = rM \rightarrow n_{\text{He}} = \frac{rM}{r} = V_{\text{mol}}$$

$$\frac{\frac{Q}{r} P_0}{1} = \frac{P_r}{1} \rightarrow P_r = 10 P_0 \rightarrow P = 9 P_0$$

--- 1B

$$\Delta U = Q + W = 0$$

$$W_{\text{ext}} = \frac{r \times 10^5 \times r \times 10^{-5}}{r} = r \times 10^0 \text{ J}$$

$$Q = r \times 10^0 \text{ J}$$

--- 1C